Amendments to the claims:

1-18 (Cancelled)

19. (Presently amended) A method for managing and transmitting a plurality of data packets through a queue in a computer network system, comprising the steps of:

determining a transmit probability of a computer network system queue as a function of an average occupancy level;

determining a low level threshold for the queue as a fraction of a maximum capacity of the queue wherein the transmit probability is ~~greater than or equal to~~ one;

determining a hysteresis level threshold for the queue as a positive hysteresis factor multiple of the low level threshold wherein the hysteresis level threshold is greater than the low level threshold and less than the maximum capacity of the queue;

initializing a hysteresis flag to ON;

in response to the queue receiving a first burst of packets wherein the hysteresis flag is set to ON:

(a) comparing a queue level to the hysteresis level threshold, and

(b) if the queue level is less than the hysteresis level threshold, the queue receiving and transmitting the first burst and revising the transmit probability; or

(c) else randomly dropping at least one packet from the first burst responsive to the transmit probability and transmitting a remainder of the first burst packets, revising the transmit probability and resetting the hysteresis flag to OFF;

in response to the queue receiving a subsequent burst of packets:

determining an ON/OFF state of the hysteresis flag;

if the determined hysteresis flag state is ON, then performing the hysteresis level threshold (a) comparing and (b) receiving, transmitting and revising or (c) dropping, transmitting, revising and resetting steps with respect to the subsequent burst; or

if the determined hysteresis flag state is OFF, then comparing a queue level to the low level threshold, and

if the queue level is less than the low level threshold and an aggregate traffic bandwidth presented to a network link connecting the queue to a node transmitting the subsequent burst is less than a maximum bandwidth capacity supported by the link, the queue receiving and transmitting the subsequent burst, revising the transmit probability, and resetting the hysteresis flag to ON; or

else the queue receiving the subsequent burst, randomly dropping at least one packet from the subsequent burst in response to the transmit probability, transmitting a remainder of the subsequent burst packets, and revising the transmit probability.

20. (Previously added) The method of claim 19, further comprising periodically updating the transmit probability and the hysteresis level threshold as a function of size of the queue and the aggregate traffic bandwidth.

21. (Previously added) The method of claim 20, wherein determining or revising the transmit probability is a function of the hysteresis flag state.

22. (Previously added) The method of claim 21, wherein determining or revising the transmit probability comprises defining the transmit probability as a transmit fraction *Ti* as a function of a data flow parameter *fi* and a service rate *S* of the network system by applying a bandwidth allocation transmit algorithm comprising;

determining if the hysteresis flag is ON or OFF;

if the flag is ON, incrementing or decrementing Ti by:

if $fi(t) <= fi,min$, then $Ti(t + dt) = min(1, Ti(t) + w)$;

if $fi(t) > fi,max$, then $Ti(t + dt) = Ti(t)(1-w)$;

if $B(t) = 1$, then $Ti(t + dt) = min(1, Ti(t)+CiBavg(t))$; or

else, $Ti(t + dt) = Ti(t)(1-DiOi(t))$;

where *Ci* is an increment constant equal to $(S + fi,min-(fl,min + f2,min +... + fn,min))/16$, and *Di* is a decrement constant equal to $(S - fi,min)*4$, or

if the hysteresis flag is OFF, incrementing or decrementing *Ti* by:

if the queue level is increasing, setting $Ti = F(Ci)$, wherein $F(Ci)$ is a bandwidth allocation transmit decreasing function; or

if the queue level is decreasing, setting $Ti = G(Di)$, wherein $G(Di)$ is a bandwidth allocation transmit increasing function.

23. (Previously added) The method of claim 22, wherein $F(Ci)=Ci/2$ and $G(Di)=min(1,2*Di)$.

24. (Presently amended) A data flow manager configured for managing and transmitting data packets through a queue in a computer network system, comprising:

a queue having a queue level in communication with the data flow manager; and

a node in communication with the queue through a network link, the link having a maximum bandwidth capacity;

wherein the data flow manager is configured to:

determine a transmit probability of the queue as a function of an average queue occupancy level;

determine a low level threshold for the queue as a fraction of a maximum capacity of the queue wherein the transmit probability is ~~greater than or equal to~~ one;

determine a hysteresis level threshold for the queue as a positive hysteresis factor multiple of the low level threshold wherein the hysteresis level threshold is greater than the low level threshold and less than the maximum capacity of the queue;

in response to the queue receiving a first burst of packets wherein a hysteresis flag is set to ON:

(a) compare a queue level to the hysteresis level threshold, and

(b) if the queue level is less than the hysteresis level threshold, cause the queue to receive and transmit the first burst, the data manager further configured to revise the transmit probability; or

(c) else cause the queue to randomly drop at least one packet from the first burst responsive to the transmit probability and transmit a remainder of the first burst packets, the data manager further configured to revise the transmit probability and reset the hysteresis flag to OFF;

in response to the queue receiving a subsequent burst of packets:

determine an ON/OFF state of the hysteresis flag;

if the determined hysteresis flag state is ON, performing the hysteresis level threshold (a) compare and (b) receive, transmit and revise or (c) drop, transmit, revise and reset steps with respect to the subsequent burst; or

if the determined hysteresis flag state is OFF, compare a queue level to the low level threshold, and:

if the queue level is less than the low level threshold and an aggregate traffic bandwidth presented to the network link is less than the maximum bandwidth capacity, cause the queue to receive and transmit the subsequent burst, the data manager further configured to revise the transmit probability and reset the hysteresis flag to ON; or

else cause the queue to receive the subsequent burst, randomly drop at least one packet from the subsequent burst in response to the transmit probability, and transmit a remainder of the subsequent burst packets, the data manager further configured to revise the transmit probability.

25. (Previously added) The data flow manager of claim 24 further configured to periodically update the transmit probability and the hysteresis level threshold as a function of size of the queue and the aggregate traffic bandwidth.

26. (Previously added) The data flow manager of claim 25 further configured to determine or revise the transmit probability as a function of the hysteresis flag state.

27. (Previously added) The data flow manager of claim 26 further configured to determine or revise the transmit probability by defining the transmit probability as a transmit fraction *Ti* as a function of a data flow parameter *fi* and a service rate *S* of the network system by applying a bandwidth allocation transmit algorithm by:

determining if the hysteresis flag is ON or OFF;

if the flag is ON, incrementing or decrementing Ti by:

if $fi(t) <= fi,min$, then $Ti(t + dt) = min(1, Ti(t) + w)$;

if $fi(t) > fi,max$, then $Ti(t + dt) = Ti(t)(1-w)$;

if $B(t) = 1$, then $Ti(t + dt) = min(1, Ti(t)+CiBavg(t))$; or

else, $Ti(t + dt) = Ti(t)(1-DiOi(t))$;

where *Ci* is an increment constant equal to $(S + fi,min-(fl,min + f2,min +... + fn,min))/16$; and *Di* is a decrement constant equal to $(S - fi,min)*4$; or

if the hysteresis flag is OFF, incrementing or decrementing *Ti* by:

if the queue level is increasing, then setting $Ti = F(Ci)$, wherein $F(Ci)$ is a bandwidth allocation transmit decreasing function; or

if the queue level is decreasing, then setting $Ti = G(Di)$, wherein $G(Di)$ is a bandwidth allocation transmit increasing function.

28. (Previously added) The data flow manager of claim 27, wherein *F(Ci)=Ci/2* and *G(Di)=min(1,2*Di)*.

29. (Presently amended) An article of manufacture comprising a computer usable medium having a computer readable program embodied in said medium, wherein the computer readable program, when executed on a computer, causes the computer to manage network data flow by:

determining a transmit probability of a computer network system queue as a function of an average occupancy level;

determining a low level threshold for the queue as a fraction of a maximum capacity of the queue wherein the transmit probability is ~~greater than or equal to~~ one;

determining a hysteresis level threshold for the queue as a positive hysteresis factor multiple of the low level threshold wherein the hysteresis level threshold is greater than the low level threshold and less than the maximum capacity of the queue;

initializing a hysteresis flag to ON;

in response to the queue receiving a first burst of packets wherein the hysteresis flag is set to ON:

(a) comparing a queue level to the hysteresis level threshold, and

(b) if the queue level is less than the hysteresis level threshold, causing the queue to receive and transmit the first burst, the computer system revising the transmit probability; or

(c) else causing the queue to randomly drop at least one packet from the first burst responsive to the transmit probability and transmit a remainder of the

first burst packets, the computer system revising the transmit probability and resetting the hysteresis flag to OFF;

in response to the queue receiving a subsequent burst of packets:

determining an ON/OFF state of the hysteresis flag;

if the determined hysteresis flag state is ON, then performing the hysteresis level threshold (a) comparing and (b) receiving, transmitting and revising or (c) dropping, transmitting, revising and resetting steps with respect to the subsequent burst; or

if the determined hysteresis flag state is OFF, comparing a queue level to the low level threshold, and

if the queue level is less than the low level threshold and an aggregate traffic bandwidth presented to a network link connecting the queue to a node transmitting the subsequent burst is less than a maximum bandwidth capacity supported by the link, causing the queue to receive and transmit the subsequent burst, the computer system revising the transmit probability and resetting the hysteresis flag to ON; or

else causing the queue to receive the subsequent burst and randomly drop at least one packet from the subsequent burst in response to the transmit probability and transmit a remainder of the subsequent burst packets, the computer system revising the transmit probability.

30. (Previously added) The article of manufacture of claim 29, wherein the computer readable program, when executed on a computer, further causes the computer

to manage network data flow by periodically updating the transmit probability and the hysteresis level threshold as a function of size of the queue and the aggregate traffic bandwidth.

31. (Previously added) The article of manufacture of claim 30, wherein the computer readable program, when executed on a computer, further causes the computer to manage network data flow by determining or revising the transmit probability as a function of the hysteresis flag state.

32. (Previously added) The article of manufacture of claim 31, wherein the computer readable program, when executed on a computer, further causes the computer to manage network data flow by:

determining or revising the transmit probability by defining the transmit probability as a transmit fraction *Ti* as a function of a data flow parameter *fi* and a service rate *S* of the network system by applying a bandwidth allocation transmit algorithm comprising;

determining if the hysteresis flag is ON or OFF;

if the flag is ON, incrementing or decrementing Ti by:

if $fi(t) <= fi,min$, then $Ti(t + dt) = min(1, Ti(t) + w)$;

if $fi(t) > fi,max$, then $Ti(t + dt) = Ti(t)(1-w)$;

if $B(t) = 1$, then $Ti(t + dt) = min(1, Ti(t)+CiBavg(t))$; or

else, $Ti(t + dt) = Ti(t)(1-DiOi(t))$;

where *Ci* is an increment constant equal to $(S + fi,min-(fl,min + f2,min$

+... + *fn,min))/16*; and *Di* is a decrement constant equal to *(S - fi,min)*4*;

or

if the hysteresis flag is OFF, incrementing or decrementing *Ti* by:

if the queue level is increasing, setting *Ti = F(Ci)*, wherein *F(Ci)* is a bandwidth allocation transmit decreasing function; or

if the queue level is decreasing, setting *Ti = G(Di)*, wherein *G(Di)* is a bandwidth allocation transmit increasing function.

33. (Previously added) The article of manufacture of claim 32, wherein *F(Ci)=Ci/2* and *G(Di)=min(1,2*Di)*.